

## **REMARKS/ARGUMENTS**

Claims 1-25 are pending in the present application. Claims 3, 6, 12, 17, 22, 23 and 25 are amended. No claims have been added and no claims have been canceled. Applicants have carefully considered the cited art and the Examiner's comments, and believe claims 1-25 patentably distinguish over the cited art in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

### **I. Objections**

The Examiner has objected to the specification because related applications identified on pages 1 and 2 fail to include serial numbers. The specification has been amended herein to supply the missing information, and withdrawal of this objection is respectfully requested.

The Examiner has also objected to claim 3 for repeating the same language twice. Claim 3 has been amended to correct this error, and withdrawal of this objection is also respectfully requested.

### **II. 35 U.S.C. § 112, Second Paragraph**

The Examiner has rejected claims 6, 12-17, 22-23, and 25 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicants regard as the invention. By the present amendment, claims 6, 12, 17, 22, 23 and 25 have been amended to correct the informalities noted by the Examiner; and the claims are now believed to be clear and definite throughout. The Examiner is thanked for bringing these informalities to Applicants' attention.

Therefore, the rejection of claims 6, 12-17, 22-23, and 25 under 35 U.S.C. § 112, second paragraph has been overcome.

### **III. Obviousness-Type Double Patenting**

The Examiner has provisionally rejected claims 1, 19 and 24 on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 13 and 21 of copending Application No. 10/675,776; and has provisionally rejected claims 1, 18, 19 and 24 on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 11, 18 and 23 of copending Application No. 10/675,777.

In order to expedite prosecution, terminal disclaimers are enclosed herewith. The filing of terminal disclaimers is appropriate because the present invention, Patent Application S.N. 10/675,776 and

Patent Application Serial No. 10/675,777 were, at the time the claimed invention was made, all commonly owned by International Business Machines Corporation.

Therefore, the provisional rejections of claims 1, 18, 19 and 24 on the grounds of nonstatutory obviousness-type double patenting have been overcome.

#### **IV. 35 U.S.C. § 101 – Double Patenting**

The Examiner has provisionally rejected claims 7, 8, 12 and 22 under 35 U.S.C. § 101 as claiming the same invention as that of claims 5, 6, 10 and 18 of copending Application No. 10/675,776; and has provisionally rejected claims 3, 6, 7, 9, 10, 12, 17 and 22 under 35 U.S.C. § 101 as claiming the same invention as that of claims 5, 6, 8, 9, 10, 15, 17 and 22 of copending Application No. 10/675,777. These provisional rejections are respectfully traversed.

As described in MPEP 804, “In determining whether a statutory basis for a double patenting rejection exists, the question to be asked is: Is the same invention being claimed twice?” “‘Same invention’ means identical subject matter”. Applicants respectfully submit that the claims of the present application are directed to different subject matter than the claims in either of Application Nos. 10/675,776 and 10/675,777; and, therefore, fully satisfy the requirements of 35 U.S.C. § 101.

Claim 1 of the present application (from which claims 7 and 8 depend) recites in part: “counting events associated with execution of the instruction and subsequent instructions if the indicator is associated with the instruction”. Claim 12 of the present application recites, in part: “counting events associated with accesses to the data if the indicator is associated with an instruction”, and claim 22 recites similar language as claim 12. None of claims 5, 6, 10 and 18 of copending Application No. 10/675,776 include such limitations. In particular, the claims in the present application are directed to counting events associated with execution of instructions. The claims of Application No. 10/675,776, on the other hand, are directed to incrementing a counter associated with an instruction in response to detecting execution of an instruction (claim 1, for example) or incrementing a counter associated with a memory location responsive to the memory location being associated with an indicator (claim 10, for example). The claims of Application No. 10/675,776 are not directed to counting events associated with the execution of an instruction, and are, thus, directed to a different invention than claims 7, 8, 12 and 22 of the present invention.

Furthermore, the claims of Application No. 10/675,776 are not directed to counting events associated with execution “of the instruction and subsequent instructions” if the indicator is associated with the instruction as recited in claim 1. Therefore, claims 7 and 8 are directed to a different invention than the claims in Application No. 10/675,776 for this reason as well.

With respect to the provisional rejection based on Application No. 10/675,777, the claims of this application are also not directed to counting events associated with execution “of the instruction and subsequent instructions” if the indicator is associated with the instruction as recited in claim 1 of the present application from which claims 3, 6, 7, 9 and 10 depend. In addition, the claims of Application No. 10/675,777 are not directed to counting events “associated with accesses to the data if the indicator is associated with an instruction” as recited in claim 12 and 22. Therefore, these claims as well as claim 17, which depends from claim 12, also recite a different invention than claims of Application No. 10/675,777.

For at least all the above reasons, Applicants believe that the claims of the present application recite an invention that is different from the inventions claimed in Application Nos. 10/675,776 and 10/675,777; and respectfully request that the provisional rejections based on 35 U.S.C. § 101 be withdrawn.

**V. 35 U.S.C. § 101**

The Examiner has rejected claims 24 and 25 under 35 U.S.C. § 101 as being directed towards non-statutory subject matter. The Examiner contends that these claims are non-statutory because they are directed to a computer readable medium which the specification defines as including “transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions” Applicants respectfully disagree that such recitation renders claims 24 and 25 non-statutory; however, in order to expedite prosecution, the objectionable subject matter has been deleted from the specification.

Therefore, the rejection of claims 24 and 25 under 35 U.S.C. § 101 has been overcome.

**VI. 35 U.S.C. § 102, Anticipation**

The Examiner has rejected claims 1-5, 8-9, 11, 19-21, and 24 under 35 U.S.C. § 102(b) as being anticipated by Pardo et al. (U.S. Patent No. 5,754,839). This rejection is respectfully traversed.

In rejecting the claims, the Examiner states as follows:

19. As per claim 1:

A method in a data processing in a data processing system for processing instructions, the method comprising:

responsive to receiving an instruction at a processor in the data processing system, determining whether an indicator is associated with the instruction (column 2, lines 7-13); and

counting events associated with execution of the instruction and subsequent instructions if the indicator is associated with the instruction (column 2, lines 33-37).

Office Action dated January 17, 2006, page 7.

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single prior art reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of a claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Applicants respectfully submit that Pardo et al, (hereinafter “Pardo”) does not identically show every element of the claimed invention arranged as they are in the claims; and, accordingly, does not anticipate the claims. With respect to claim 1, in particular, Pardo does not teach or suggest “counting events associated with execution of the instruction and subsequent instructions if the indicator is associated with the instruction”, and therefore, does not anticipate claim 1.

Column 2, lines 33-37 of Pardo, referred to by the Examiner as disclosing this feature reads as follows:

The watchpoint information may include information regarding the incrementing and decrementing of watchpoint counters (e.g. counters 41 and 42 in Fig. 2), as well as information regarding whether or not a watchpoint has occurred.

This recitation in Pardo is not a disclosure of “counting events associated with execution of the instruction and subsequent instructions if the indicator is associated with the instruction” as recited in claim 1.

Pardo is directed to a mechanism for implementing watchpoints and breakpoints in a data processing system. The operation of the mechanism is described beginning in Col. 5, line 51, and Col. 5, lines 54 to Col. 6, line 13 reads as follows:

In operation, instructions are fetched from the memory 138 into the instruction queue 20. A programmer wishing to know when a particular instruction is fetched sets up a watchpoint on the memory address containing that instruction. This is done by programming the I-bus support logic 10 to recognize a fetch from that particular memory address. Note that I-bus support logic 10 uses well known comparator circuitry. When the particular address fetch occurs, the I-bus support logic 10 generates a watchpoint indication on one of the watchpoint conductors 14, for example IWP[0]. Thus I-bus watchpoints are originated in the I-bus support logic 10, and indicated by the watchpoint indications on the watchpoint conductors 14.

The I-bus watchpoint indication is stored with its associated instruction (i.e. the instruction that gave rise to it) in the instruction queue 20. In this way I-bus watchpoints are not generated immediately following the fetch, but are stored alongside their associated instructions in the instruction queue 20. The instruction at the head of the

instruction queue 20 is issued to the next available one of the execution units 25, at which point it and any watchpoint indications associated with it are moved from the instruction queue 20 to the history buffer 50. When a watchpoint occurrence indication is moved from the instruction queue 20 to the history buffer 50, a corresponding count decrement indication is also transferred from the counter module 40 to history buffer 50. The watchpoint occurrence indication and the corresponding count decrement indication are stored together in the history buffer with the associated instruction that caused the watchpoint. (Emphasis added.)

As clearly described in the above recitation, the mechanism in Pardo counts watchpoints (and, as described elsewhere in the patent, may also count breakpoints). The watchpoint is set up when an instruction is fetched, and an indication of the watchpoint is stored with the associated instruction in the instruction queue so that it may be counted when the indication is moved from the instruction queue to a history buffer where it is stored along with the instruction. Thus, the watchpoint indications in Pardo, are not events associated with execution of an instruction and subsequent instructions as required in claim 1, but identify when instructions are fetched from a memory address. Pardo, therefore, does not count “events associated with execution of the instruction and subsequent instructions if the indicator is associated with the instruction” as required by claim 1; and claim 1, accordingly, is not anticipated by Pardo.

Claims 2-5, 8, 9 and 11 depend from and further restrict claim 1, and are also not anticipated by Pardo, at least by virtue of their dependency. In addition, many of these claims recite additional features that are not disclosed by Pardo. For example, Claim 3 additionally requires that an event recited in claim 1 include at least one of “an entry into a module, an exit from a module, an entry into a subroutine, an exit from a subroutine, an entry into a function, starting of input/output, completion of input/output, execution of the instruction, and time needed to execute the instruction”. The Examiner asserts that Pardo discloses “execution of the instruction”, and “time needed to execute the instruction” “since it is inherent that the processor will be provided time to execute the instruction properly”.

Even if the Examiner’s assertion is correct that “execution of the instruction”, and “time needed to execute the instruction” are events, Pardo does not disclose that such events are counted. As indicated above, Pardo only discloses counting watchpoints and breakpoints. Claim 3, accordingly, is not anticipated by Pardo in its own right as well as by virtue of its dependency.

The subject matter of claims 4 and 5 is also not disclosed in Pardo. As noted by the Examiner, when the watchpoint counter in Pardo counts down to zero, a breakpoint signal is generated to initiate an exception routine (see col. 8, lines 39-46). This is not the same as “receiving another instruction after receipt of the instruction, wherein the another instruction is associated with the indicator”; and “halting counting of the events associated with the execution of the instruction and subsequent instructions in response to receiving the another instruction associated with the indicator” as recited in claim 4; or

“receiving another instruction after receipt of the instruction, wherein the another instruction is associated with a second type of indicator”; and “halting counting of the events associated with the execution of the instruction and subsequent instructions in response to receiving the another instruction associated with the second type of indicator” as recited in claim 5.

Claims 4 and 5, accordingly, are also not anticipated by Pardo in their own right as well as by virtue of their dependency.

Claims 19 and 24 recite subject matter similar to claim 1, and are not anticipated by Pardo for similar reasons as discussed above with respect to claim 1. Claims 20 and 21 depend from and further restrict claim 19, and are also not anticipated by Pardo.

Therefore, the rejection of claims 1-5, 8-9, 11, 19-21, and 24 under 35 U.S.C. § 102 has been overcome.

Furthermore, Pardo does not teach, suggest, or give any incentive to make the needed changes to reach the presently claimed invention. Pardo actually teaches away from the presently claimed invention because it only teaches counting watchpoints and breakpoints as opposed to counting events associated with execution of an instruction and subsequent instructions if an indicator is associated with the instruction as in the present invention. Absent the Examiner pointing out some teaching or incentive to implement Pardo to achieve the present invention, one of ordinary skill in the art would not be led to modify Pardo to reach the present invention when the reference is examined as a whole. Absent some teaching, suggestion, or incentive to modify Pardo in this manner, the presently claimed invention can be reached only through an improper use of hindsight using the Applicants’ disclosure as a template to make the necessary changes to reach the claimed invention.

## **VII. 35 U.S.C. § 103, Obviousness – Claims 12-14, 16-17, 22-23, and 25**

The Examiner has rejected claims 12-14, 16-17, 22-23, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Pardo et al. (U.S. Patent No. 5,754,839) in view of Edwards et al. (U.S. Patent No. 6,378,064 B1). This rejection is respectfully traversed.

In rejecting the claims, the Examiner acknowledges that Pardo does not disclose counting events associated with data accesses. The Examiner, however, contends that this feature is disclosed in Edwards, and asserts that it would be obvious to apply Edwards to Pardo “to alleviate the difficulties associated with setting watchpoints solely based on instructions”. Applicants respectfully disagree.

As indicated above, Pardo is concerned with counting watchpoints and breakpoints. Pardo is not concerned with counting events associated with data accesses, and there is no suggestion or motivation in either Pardo or Edwards to modify Pardo to count “events associated with accesses to the data if the indicator is associated with an instruction” as recited in claim 12. Only the present application contains

any suggestion to combine the references a proposed by the Examiner. Applicants submit that the Examiner has not established a *prima facie* case of obviousness in rejecting the claim 12 as being unpatentable over Pardo in view of Edwards, and that claim 12 patentably distinguishes over Pardo in view of Edwards and should be allowable in its present form.

Claims 13, 14, 16 and 17 depend from and further restrict claim 12 and are also not unpatentable over Pardo in view of Edwards, at least by virtue of their dependency.

Independent claim 22 recites similar subject matter as claim 12 and patentably distinguishes over Pardo in view of Edwards for similar reasons as discussed above with respect to claim 12. Claim 23, depends from and further restricts claim 22 and claim 25 depends from and further restricts claim 24. These claims also patentably distinguish over the references, at least by virtue of their dependency.

Therefore, the rejection of claims 12-14, 16-17, 22-23, and 25 under 35 U.S.C. § 103 has been overcome.

#### **VIII. 35 U.S.C. § 103, Obviousness – Claims 6 and 18**

The Examiner has rejected claims 6 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Pardo et al. (U.S. Patent No. 5,754,839) as applied to claim 1 and in view of Betker et al. (U.S. Patent Application Publication No. 2003/0154463 A1). This rejection is respectfully traversed.

The Examiner acknowledges that Pardo does not disclose receiving watchpoints from an instruction cache, and cites Betker as supplying this deficiency.

Claim 6 depends from and further restricts claim 1, and Betker does not supply the deficiencies in Pardo as described above. Claim 6, accordingly, should be allowable in its present form, at least by virtue of its dependency.

Claim 18 is an independent claim and recites “a performance monitor unit, wherein the performance monitor unit counts events for an instruction and subsequent instructions when a signal is received”, and “an instruction cache, wherein the instruction cache receives instructions and sends the signal to the performance monitor unit to count the events associated the instruction and with subsequent instructions when the instruction is associated with an indicator”. As discussed above, Pardo does not disclose counting “events associated with the instruction and with subsequent instructions when the instruction is associated with an indicator”, and Betker does not supply the deficiencies in Pardo. Claim 18, accordingly, is also not obvious over Pardo in view of Betker and should be allowable thereover in its present form.

Therefore, the rejection of claims 6 and 18 under 35 U.S.C. § 103 has been overcome.

**IX. 35 U.S.C. § 103, Obviousness – Claim 7**

The Examiner has rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Pardo et al. (U.S. Patent No. 5,754,839) as applied to claim 1 and in view of Chrysos et al. (U.S. Patent No. 6,163,840). This rejection is respectfully traversed.

Chrysos is cited for disclosing an indicator located in a field in an instruction. Claim 7, however, depends from and further restricts claim 1, and Chrysos does not supply the deficiencies in Pardo as described above. Claim 7, accordingly, should be allowable in its present form, at least by virtue of its dependency.

Therefore, the rejection of claim 7 under 35 U.S.C. § 103 has been overcome.

**X. 35 U.S.C. § 103, Obviousness – Claim 10**

The Examiner has rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Pardo et al. (U.S. Patent No. 5,754,839) as applied to claim 1 above and in view of Betker et al. (U.S. Patent Application Publication No. 2003/0154463 A1) and Legvold et al. (U.S. Patent No. 5,404,500). This rejection is respectfully traversed.

Legvold is cited as disclosing a shadow cache. Claim 10, however, depends from and further restricts claim 1. Legvold does not supply the deficiencies in Pardo and Betker as described above, and claim 10 should be allowable in its present form, at least by virtue of its dependency.

Therefore, the rejection of claim 10 under 35 U.S.C. § 103 has been overcome.

**XI. 35 U.S.C. § 103, Obviousness – Claim 15**

The Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Pardo et al. (U.S. Patent No. 5,754,839) in combination with Edwards et al. (U.S. Patent No. 6,378,064 B1) as applied to claim 12 above in further view of Chrysos et al. (U.S. Patent No. 6,163,840). This rejection is respectfully traversed.

Claim 15 depends from and further restricts claim 12. Chrysos does not supply the deficiencies in Pardo and Edwards as described above, and claim 15 should be allowable in its present form, at least by virtue of its dependency.

Therefore, the rejection of claim 15 under 35 U.S.C. § 103 has been overcome.



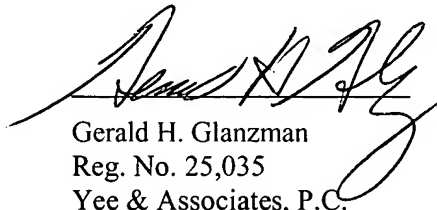
**XII. Conclusion**

For all the above reasons, it is respectfully urged that claims 1-25 are allowable in their present form, and that this application is now in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: April 12, 2004

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Gerald H. Glanzman', is written over a horizontal line.

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